

PROCEEDINGS OF LEARNED SOCIETIES.

GEOLOGICAL SOCIETY.

March 14th, 1917.—Dr. A. Smith Woodward, F.R.S.,
Vice-President, in the Chair.

The following communication was read:—

‘The Carboniferous Limestone bordering the Leicestershire Coalfield.’ By Leonard Miles Parsons, D.I.C., B.Sc., F.G.S.

The inliers of Carboniferous Limestone situated along the northern border of the Leicestershire Coalfield crop out in two well-defined series:—a Western series composed of almost horizontal beds exposed by stream-erosion, and an Eastern series in which the limestone is highly inclined and complicated by faulting. The thinly-bedded limestones, shales, and dolomites of the Western inliers are of a slightly-higher horizon than that of the uppermost beds of the more massive dolomites seen at Breedon and Breedon Cloud farther eastwards. In no part of the district is the base of the Carboniferous seen, although borings have shown that the limestone rests upon pre-Cambrian rocks in the neighbourhood of Charnwood Forest.

The dolomites of the area yield evidence of two distinct periods of dolomitization—one pre-Triassic, the other subsequent to the Trias. During the former period the bulk of the rock was dolomitized.

The fauna of the limestones and dolomites indicates the presence of palæontological horizons ranging from D_1 to D_2 – D_3 inclusive. The D_1 portion of the sequence, consisting of thickly-bedded dolomites without chert, contains a fauna similar to that of the Caldun-Low facies of the south-western part of the Main Midland Province, the rare species *Productus humerosus* being found at Breedon and Breedon Cloud.

Unlike the rocks of the D_1 subzone of Derbyshire, the corresponding beds in Leicestershire contain no igneous rocks equivalent to the ‘Toadstones.’ Higher dolomites with chert, equivalent to the cherty limestones of Derbyshire, yield a D_2 fauna, which somewhat resembles that of the localized development of the *Lonsdaleia* Subzone in the south-western part of the Midland area, in the region of Waterhouses.

A typical D_3 development is not present in Leicestershire, although the upper barren dolomites of Ticknall may represent part of the *Cyathaxonia* Subzone of other districts.

The Pendleside Beds are poorly represented by about 30 feet of blue shales, which are succeeded conformably by the Millstone Grit.

April 18th, 1917.—Dr. Alfred Harker, F.R.S., President,
in the Chair.

The following communication was read:—

‘The Development and Morphology of the Ammonite Septum.’
By Prof. Henry Hurd Swinnerton, D.Sc., F.G.S., and Arthur
Elijah Trueman, M.Sc.

Two methods of studying the septum (not merely the suture)
were used:—

- (1) Cleaning the face of the septum completely.
- (2) Filing away the surface of the whorl in successive layers, and thus making a series of sections—called septal sections—of the septum parallel to its periphery.

An instrument was designed for measuring accurately the variations in level of the face of the septum in relation to a definite datum-plane; and also the thickness of the layers filed off from the whorl.

Dactylioceras commune, *Sphæroceras bronquiarti*, and *Tragophylloceras loscombi* were chosen as types with normally shaped, greatly depressed, and greatly elevated whorls respectively.

A contoured plan, of the adult septum of *Dactylioceras*, shows that half the septum lies approximately in one plane; and that the posterior folds or lobes occupy a greater area than the anterior folds or saddles. It also confirms the view that the septum is, on the whole, convex forwards. In all three types the axes of the folds remain approximately at right angles to the periphery through all the changes in shape of the whorl. Incompletely formed septa indicate that secretion commences at the umbilical angle and at a definite distance from the preceding septum.

The examination of adult sutures of various species of *Dactylioceras* shows that the major frillings alone are of systematic importance for that genus. The variations in the minor frillings, and in the suture-line as a whole, throw light on the changes which accompany senile decline.

The second septum is remarkably like the central portion of the adult septum; but the flattened portion is relatively less extensive, the folds are sharper, and the whole septum tends to be concave rather than convex. As development advances the successive septa possess a similar resemblance to an increasing area of the adult septum. The outcome of this is, that a series of septal sections of the adult septum closely resembles the developmental series of the suture-line. The same is true also for *Sphæroceras* and *Tragophylloceras*.

In no case do the septal sections show a stage comparable with the first suture-line. In *Tragophylloceras* the similarity starts not later than the seventh septum. With these exceptions, septal sections reproduce the main features in the development of the sutures with sufficient accuracy to justify their use for the same purpose, especially when the material for the study of the early stages is inaccessible.

It is possible that septal sections may also furnish the clue to the probable lines along which simplification of the suture proceeds in the retrogressive members of any stock.

Asymmetry of the septum, and of the suture-line, in ammonites is more common than is usually supposed. It may arise in one of two ways, namely:—

- (1) By the different development of the elements of opposite sides.
- (2) In association with the lateral displacement of the siphuncle.

Asymmetry of the latter type has been considered as of systematic importance. Nevertheless, while it does arise more frequently in certain genera, as, for instance, in *Psiloceras* and *Hoplites*, it occurs not uncommonly in many other unkeeled ammonites.

May 2nd, 1917.—Dr. Alfred Harker, F.R.S., President,
in the Chair.

The following communication was read:—

1. 'Supplementary Notes on *Aclisina* De Koninck, and *Aclisoides* Donald, with Descriptions of New Species.' By Jane Longstaff (*née* Donald), F.L.S.

Since the publication of a paper by the Geological Society on *Aclisina* in 1898, a much larger amount of material has come to hand, which has not only added to the knowledge of the species there described, but has also led to the discovery of six others new to science. The diagnoses of these are now given, and a species named by Mr. H. Bolton *Loxonema ashtonensis* is referred to this genus, as several specimens show the characteristic lines of growth.

The total number of species of *Aclisina* is now brought up to twenty-two, and there are besides several varieties. The genus is best represented in Scotland, where the specimens are generally remarkably well preserved, no less than thirteen having the protoconch intact, drawings of which show its somewhat irregular character. A table is appended giving—so far as known—the range and localities in the British Isles and Belgium. A small variety of *Aclisina pulchra* De Koninck appears to have continued for the greatest length of time, commencing in the Calciferous Sandstone Series, existing throughout the Lower and Upper Limestone Series and on into the Millstone Grit of Scotland.

Additional observations are also made on *Aclisoides striatula* (De Koninck), showing its variation in size and ornamentation, as well as its range throughout the Lower and Upper Carboniferous Series of Scotland, its occurrence at Settle and Poolvash, and at Tournai as well as Visé. New drawings are given of De Koninck's type-forms. One of these, as also a Scottish example, has the characteristic sinus preserved. The holotypes of the first described species were not originally selected: that omission is now rectified, with references to the collections in which they are deposited.

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THE ANNALS

AND

MAGAZINE OF NATURAL HISTORY.

[EIGHTH SERIES.]

No. 116. AUGUST 1917.

XII.—*A Systematic Revision of the African Species of the Coleopterous Family Erotylidæ.* By GILBERT J. ARROW.

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HAVING been asked by Professor Thaxter, of Harvard, to determine for him several species of African Erotylidæ upon which he has discovered parasitic growths of Laboulbeniaceæ, two of the hosts being here described as new species, it has become necessary to look closely into the comparative characters of the recognized genera. This has revealed a state of confusion in the nomenclature which, so long as it remains, renders the description of additional species a positive disservice to systematic entomology, as increasing the difficulties of those who come after. In naming these new forms I have therefore felt myself under the obligation of attempting to bring into some better order the genera concerned. The recent work upon the group contributed by Kuhnt to Wytsman's 'Genera Insectorum' fails in any way to dissipate the prevailing confusion. In his tables of genera sections are actually made to which no characters of any kind are assigned, the supposed geographical range of the genera being substituted. It is evident that the materials upon which the work is based were altogether inadequate for the purpose; but it is difficult to understand what value exists in compilations produced under such conditions.

Kuhnt has catalogued seventy-four African species under fifteen generic names; but seven of the latter names prove

superfluous, and a critical examination shows that a considerable number of the specific names are synonyms. At the end of this paper I have given a revised list of the African species, distributed, so far as available materials permit (and I have fortunately been able to determine the large majority of described species), under their correct generic names. A number of hitherto unknown species are added. The genera will no doubt be increased as our knowledge of the species grows : but the latter are not numerous, so far as at present recorded, and the creation of new genera, in the present unsatisfactory state of classification of the family, appears very undesirable.

Either by oversight or intention the genus *Euxestus* has been omitted by Kuhnt both from the 'Genera' and his since-published Catalogue, although allied genera like *Hypodacne* and *Eidoreus* are included. The African species of *Euxestus* here described forms an interesting link with *Hypodacne* and helps to render the position of the former genus less enigmatical. This is the second species known to me, all the non-African specimens I have seen, although bearing many names, being conspecific. *Euxestus parki*, Woll., was first discovered in Madeira ; but I have seen specimens from China, Burma, the Malay Peninsula, Philippine Is., Java, Hawaiian Is., Haiti, Central America, etc. *E. minor*, Sharp, and *E. piciceps*, Gorh., are certainly identical with it (see Champion, Trans. Ent. Soc. Lond. 1913, p. 79) ; and *Neoplotera peregrina*, Belon, and *Tritomidea translucida*, Motsch., I believe to be also synonymous both as genera and species. It is not possible to decide whether Motschulsky's names *basalis* and *oblonga* also belong to the same insect ; but the *Tritomidea rubripes* of Reitter, although related, is not congeneric, and the two Malayan species referred to *Tritomidea* by Gorham have evidently neither affinity nor resemblance to it.

M. Bedel has recently formed a new genus, *Mimodacne*, for certain species previously included in *Megalodacne* but in which the club of the antenna is very large and markedly asymmetrical. The genus is a little difficult to define, as the shape of the club is gradually developed through a series of transitions : but it may be convenient to retain it for those species which exhibit the most pronounced asymmetry. One of these, *M. magnifica*, Har., has been transferred to *Lindesmus* by Kuhnt, in spite of the fact that Harold stated its resemblance to *L. cactus* to be purely superficial. It has also been redescribed by Kuhnt as *Megalodacne kolbei*.

I have found myself, like Harold (Colcopt. Hefte, xvi.

1879, p. 219), unable to discover any feature of generic value by which it is possible to distinguish Crotch's genera *Megalodacne* and *Episcaphula*, and I therefore regard the latter, which is of later date, as a synonym of the former. All the African species retained in *Episcapha* in Kuhn's Catalogue have an elongate third joint to the antenna, and must therefore be referred to *Megalodacne*.

The sexes of many species of this genus are strongly differentiated by the curvature of the tibiæ and the dilatation of the tarsi in the male. *Episcaphula dubia*, Crotch, is the female of *E. aulacochiloides*, Crotch, the punctured prosternum noticed in the latter by Crotch being also a male character.

Episcapha schweitzeri, Dohrn, is synonymous with *Megalodacne obliquata*, Lacord.; *E. rectesignata*, Crotch, is a barely distinguishable form of it; and *E. neutra*, Dohrn, is evidently very closely related. *Megalodacne scenica*, Gerst., has also been redescribed as *Episcaphula picturata*, Gorh. The species described by Lacordaire as *Episcapha repanda* is probably not the true *M. repanda*, but the one later named *E. piciventris* by Gorham. *Episcaphula subcostata*, Schenk., appears to belong to the genus *Plagiopisthen*, which is best retained for the present as a separate genus, on account of its distinctive shape. *Platydacne* is a synonym of it.

The paper by Gorham describing Erotylidæ from South and West Africa (Ann. & Mag. Nat. Hist. (7) v. 1900) is so astonishing an example of confused nomenclature, and has resulted in complicating the synonymy of the genera concerned to such a degree, that the mind rather recoils from the Augean task of clearing the ground. Gorham's genera are usually exceedingly unsatisfactory, and his own conception of them is often geographical rather than morphological, as shown by such remarks as "Had this species been an African insect, I should have referred it to my genus *Amblyscelis*" (l. c. p. 90) and "I have taken an African insect for the type of *Amblyscelis*, otherwise I should have regarded this species and *A. nigrinus* as belonging to my genus *Petaloscelis*" (l. c. p. 89). It is evident from these passages that the genus *Amblyscelis* was a shadowy one, even in the mind of its author. Gorham has not, as a matter of fact, cited its type at all, but states that it is formed for the African species placed in *Amblyopus* by Lacordaire and Crotch. Of these he mentions only *A. senegalensis*, Lacord., which may therefore be considered the type of *Amblyscelis*. This species I do not know, but it possesses the very large and coarsely-faceted eyes and the narrow, loosely-jointed

antennal club characteristic of *Amblyopus*, whilst others associated with it by Gorham have small, finely faceted eyes and very short, broad, and closely articulated club-joints, as in *Petaloscelis*. It is true that they all agree in inhabiting Africa, but, in spite of that, their structural diversity precludes their association in a single genus.

The type of *Petaloscelis* is a Burmese insect, *P. instabilis*, Gohl. Kuhn has joined with it a very different species, *Erotylus rubens*, Hope, although I had already stated that to be a *Neotriplax*. With *P. instabilis* "*Amblyscelis*" *pallidus* and *hæmorrhous* of Gorham may be associated, and *A. kelleni* and *brumeus*, Gohl. (and perhaps *A. gorhami*, Gestro), are synonyms of the last. Another species is "*Zythonia*" *anthracina*, Gohl., incomprehensibly referred to a genus to which it has no resemblance. Equally mysterious is Gorham's simultaneous redescription of the true *Zythonia* (*Z. fulva*, Westw.), a striking and unmistakable insect, as *Lophocrotaphus guineensis*.

To the genus *Amblyopus* I refer "*Amblyscelis*" *ferrugineus* and *vittipennis*, Gohl., the latter name, as well as *Triplax dorsalis*, Kolbe, being synonymous with *Triplax marginata*, Qued. *A. nigripennis*, Arr., I am now satisfied is the same as *Amblyopus natalensis*, Crotch.

I do not know the species for which Gorham has made the genus *Pycnogeusteria*, but, as he has indicated no features of any generic significance by which it can be distinguished from *Petaloscelis*, I think it will be best to regard it as synonymous with that.

In 'Notes from the Leyden Museum,' 1888, p. 147, Gorham has changed the name *Cyrtotriplax* (*Tritoma*) *senegalensis*, Crotch, to *Amblyopus rotundatus* (omitted from Kuhn's Catalogue), but without reason, for Crotch's species agrees well with *Tritoma*. *Petaloscelis nigrinus*, Gohl., and several other African species are now added to this genus. They differ considerably in the form of the tibiæ and antennæ, but the transition is gradual from species to species, and I have found nothing to justify adding to the already too numerous genera.

Closely related to *Tritoma* is the peculiar genus *Palæolybas*, which has never been adequately described, although various species have been named by Crotch and Gorham. It has been quite unnaturally placed with South-American forms on account of its globose shape. In reality, it differs from *Tritoma* only in minor details, viz. the shape of the body, short legs, feeble antennæ, and broadly bilobed prosternum. An important feature hitherto overlooked is the marked

sexual dimorphism of some at least of the species. The males are characterised by greatly dilated tarsi; but, in several species, they have a more remarkable peculiarity in a conspicuous opaque area upon the posterior part of the elytra. Analogy would lead us to consider this distinctive of the females, as in Water-beetles, various Lamellicornia, and other groups in which a similar phenomenon occurs; but this is not the case. The dilated tarsi are not by themselves sufficient to determine the sex, for, although almost invariably indicative of the male, in certain genera of Languriinæ, a closely related group, it is the female in which the tarsi are most dilated. In these and other cases the determination of the sex from external indications only has led to totally wrong conclusions, and dissection is essential to absolute certainty.

As is frequently found with secondary sexual characters, the opaque dorsal area is not found in all the species of the genus. I have found it in three, in one only of which (*P. andrea*, Crotch) both sexes are known, but in all it is confined to male specimens. In *P. coccinelloides*, Crotch, *P. dorsalis*, Gorh., and *P. bizonatus*, sp. n., both sexes are equally smooth. Although it has not hitherto been recorded, this curious phenomenon is also found in the genus *Neotriplax*—in a strongly marked form in *N. atrata*, Lewis, and to a less extent in *N. lewisi*, Crotch, both Japanese species.

Dacne (*Engis*) *æquinocialis*, Thoms., is almost certainly the species later described by Crotch as *D. capensis*, which has an exceedingly wide range in Africa.

The only known African representatives of the *Encaustes* group are here described. Gorham described in 1883 a species, *Micrencaustes torquata*, the habitat of which he stated to be Old Calabar; but in 1901 he expressed himself doubtful of its African origin. In the British Museum there is a specimen of this species, derived, like Gorham's type, from Andrew Murray's collection, and labelled "Malay Peninsula."

The true systematic position of this group has never been recognized. The monographer of the Erotylidæ, Lacordaire, in his Synopsis of the genera, divided them into two series, at the head of each of which he placed an isolated genus as to the actual affinities of which he was evidently uncertain. The first of these, *Encaustes*, on account of its large size and elongate shape, is, not unnaturally, generally associated with the other large Old World species represented by those now called by M. Bedel *Mimodacne*; but Chapuis has pointed out that Lacordaire, in adopting this view, was

misled by an incorrect observation of the form of its maxillæ, and has removed it from the first series. He has not, however, transferred it to the second series, but has made for it a special group, of which the distinguishing features have little value. The projecting shoulders, which are chiefly relied upon, disappear in the species now called *Micrencaustes*.

The second series (Erotylini genuini) of Lacordaire (the Erotylites of Chapuis) consists entirely of Neotropical genera, with the addition of the single Old World genus *Aulacochilus*. A comparison between this genus and *Micrencaustes* will reveal the interesting fact that they are really very closely allied—and indeed identical—in all essential points of structure, differing only in the shorter and more ovate form, shorter antennæ, and less dilated tarsi of *Aulacochilus*. The peculiar form of the antennal club, the coarsely faceted eyes, strongly transverse last joint of the maxillary palpus, and the general conformation of the mouth are the same. Most important of all is a peculiar development of the genæ, which distinguishes this group of genera from all others. These are sharply elevated at the sides of the mouth, walling-in the latter in continuation of the mandibles, and forming a rest against which the delicate sensory surface of the last joint of the maxillary palpus is applied when in repose. This conformation I consider most essentially distinctive of the Encaustini, consisting of the four genera *Aulacochilus*, *Micrencaustes*, *Encaustes*, and *Asmonax*. As showing the closeness of the relationship between the first two of these, I may mention that the Philippine species described by M. Bedel as *Aulacochilus maximus* would, in my opinion, be better placed in *Micrencaustes*. It is nearly related to *M. 6-guttata*, Gorh.

For the purpose of the present revision, I have examined the African types of Crotch in the Cambridge Museum, but these do not include the species described by him from Andrew Murray's collection, the location of which is unknown to me.

The following Synopsis gives briefly the differential characters of all the genera of Erotylidæ which can, in my opinion, be admitted as African :—

Club of the antenna articulated.

4th joint of the tarsus reduced.

Last joint of the maxillary palpus longitudinal.

Antennæ very slender, with the club very

narrow *Linodesmus*.

Antennæ not very slender, with the club well-marked.	
Joints of the antennal club strongly oblique.	<i>Mimodacne.</i>
Joints of the antennal club not strongly oblique.	
Body strongly tapering behind, prothorax relatively broad	<i>Plagiopisthen.</i>
Body not strongly tapering behind, prothorax not very broad	<i>Megalodacne.</i>
Last joint of the maxillary palpus transverse.	
Genæ sharply elevated at the sides of the mouth.	
Body and antennæ long; tarsi more dilated.	
Prosternum not pointed in front	<i>Encaustes.</i>
Prosternum pointed in front	<i>Micrencaustes.</i>
Body and antennæ short; tarsi less dilated.	<i>Aulacochilus.</i>
Genæ flat.	
Head not dilated.	
Club of the antenna very broad and compact	<i>Petaloscelis.</i>
Club of the antenna not very broad and compact.	
Eyes very large and coarsely faceted . .	<i>Amblyopus.</i>
Eyes not very large and coarsely faceted.	
Prosternum not bilobed behind	<i>Tritoma.</i>
Prosternum bilobed behind	<i>Palæolybas.</i>
Head greatly dilated	<i>Zythonia.</i>
4th joint of the tarsus not reduced	<i>Dacne.</i>
Club of the antenna solid	<i>Euvestus.</i>

At the end of this paper I have given a revised synonymical list of the African species.

Megalodacne læta, sp. n.

Nigra, nitidissima, singulo elytro bis rufo-fasciato, fasciis valde undulatis, ad suturam haud attingentibus, prima post-humerali, secunda post-mediana, obliqua; elongato-ovalis, convexa, capite et pronoto sat fortiter et crebre, sed hujus medio lævius, punctatis, pronoti lateribus leviter arcuatis, distincte marginatis; elytris leviter punctato-striatis, subtilissime punctulatis:

♂, tibiis omnibus valde arcuatis, abdomine subtus medio dense flavo-pubescenti.

Long. 10-11 mm.; lat. max. 4.5-5 mm.

NYASALAND: Mlanje.

A series was taken by Mr. S. A. Neave in November and December.

It is a species of similar size, shape, and markings to *M. (Episcaphula) repanda*, Kl., and *piciventris*, Gorh., but is not red beneath and is much more smooth and shining